

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (Canceled)

21. (New) A light emitting device comprising:

a residual substrate portion having a first main surface and a second main surface, the first main surface having an opening filled with a reflective component, the residual substrate portion being composed of a GaAs single crystal;

a main compound semiconductor layer on the first main surface of the residual substrate portion, the main compound semiconductor layer having first and second main surfaces and including a light emitting layer having a first conductive layer with first and second main surfaces, an active layer on the first main surface of the first conductive layer, and a second conductive layer on the active layer, in this order as viewed from a side closest to the residual substrate portion, the second main surface of the first conductive layer being a bottom surface of the opening in the residual substrate portion; and

a first electrode portion on a portion of a first main surface of the main compound semiconductor layer, portions of the first main surface of the main compound semiconductor layer that the first electrode portion is not on being a main light extraction surface of the light emitting device.

22. (New) A light emitting device comprising:

a residual substrate portion having a first main surface and a second main surface, the residual substrate portion being composed of a GaAs single crystal;

a main compound semiconductor layer on the first main surface of the residual substrate portion, the main compound semiconductor layer having first and second main surfaces and including a light emitting layer having a first conductive layer, an active layer on

the first conductive layer, and a second conductive layer on the active layer, in this order as viewed from a side closest to the residual substrate portion, the main compound semiconductor layer being configured to have a greater lateral extension than the residual substrate portion that it is on;

a first electrode portion on a portion of the first main surface of the main compound semiconductor layer, portions of the first main surface of the main compound semiconductor layer that the first electrode portion is not on being a main light extraction surface of the light emitting device;

a stage, the residual substrate portion being adhered to a main surface of the stage; and

a conductive stem electrically connected to the first electrode portion, wherein portions of the main surface of the stage to which the residual substrate portion is not adhered reflecting light emitted from the light emitting layer.

23. (New) A light emitting device comprising:

residual substrate portion having a first main surface and a second main surface, the residual substrate portion being composed of a GaAs single crystal;

a main compound semiconductor layer on the first main surface of the residual substrate portion, the main compound semiconductor layer having first and second main surfaces and including a light emitting layer having a first conductive layer, an active layer on the first conductive layer, and a second conductive layer on the active layer, in this order as viewed from a side closest to the residual substrate portion, the second main surface of the main compound semiconductor layer being on the first main surface of the residual substrate portion, the main compound semiconductor layer being configured to have a lateral extension greater than the residual substrate portion that it is on;

a first electrode portion on the second main surface of the residual substrate portion;

a stage, the first main surface of the main compound semiconductor layer being adhered to a main surface of the stage; and

a conductive stem electrically connected to the first electrode portion.

24. (New) The light emitting device according to Claim 23, wherein circumferential side surfaces of the residual substrate portion are inclined surfaces and an area of the second main surface of the residual substrate portion is smaller than an area of the first main surface of the residual substrate portion, and the first electrode portion covers the second main surface and the circumferential side surfaces of the residual substrate portion, the device further comprising:

a second electrode portion extending laterally on the second main surface of the main compound semiconductor layer from the first electrode portion, the second electrode portion being integral with the first electrode portion.

25. (New) A light emitting device comprising:
a residual substrate portion having a first main surface and a second main surface, the residual substrate portion being composed of a GaAs single crystal;
a main compound semiconductor layer on the first main surface of the residual substrate portion, the main compound semiconductor layer having first and second main surfaces and including a light emitting layer having a first conductive layer, an active layer on the first conductive layer, and a second conductive layer on the active layer, in this order as viewed from a side closest to the residual substrate portion, a transparent semiconductor layer being on the second conductive layer, the second main surface of the main compound semiconductor layer being on the first main surface of the residual substrate portion, the

transparent semiconductor layer being composed of a III-V compound semiconductor having a band gap energy larger than photon energy corresponding to a peak wavelength of emission beam from the light emitting layer, the main compound semiconductor layer being configured to have a lateral extension greater than the residual substrate portion that it is on; and

a first electrode portion on the second main surface of the residual substrate portion, wherein

the transparent semiconductor layer is configured to have a lateral extension greater than the light emitting layer, exposing a surface of the transparent semiconductor layer between the first and second main surfaces of the main compound semiconductor layer, and

a second electrode portion is on the exposed surface of the transparent semiconductor layer and has a polarity different from the first electrode portion.

26. (New) A method of forming a light emitting device comprising:

epitaxially growing on a first main surface of a substrate bulk composed of a GaAs single crystal, a separation-assisting compound semiconductor layer composed of a III-V compound semiconductor single crystal having a composition different from GaAs;

epitaxially growing a sub-substrate portion composed of the GaAs single crystal on the separation-assisting compound semiconductor layer;

epitaxially growing, on a first main surface of the sub-substrate portion, a main compound semiconductor layer having therein a light emitting layer, the main compound semiconductor layer and the light emitting layer each having a first main surface and a second main surface;

removing the separation-assisting compound semiconductor layer by chemical etching, to separate the substrate bulk from the sub-substrate, the sub-substrate separated from the substrate bulk being a residual substrate portion on the second main surface of the

main compound semiconductor layer, the residual substrate portion having a first main surface and a second main surface; and

cutting off a portion of the residual substrate portion to form a cut-off portion having a bottom surface that serves as a light extraction surface or a reflective surface with respect to an emission beam from the light emitting layer.

27. (New) The method according to claim 26, wherein epitaxially growing the main compound semiconductor layer includes epitaxially growing the main compound semiconductor layer in contact with a first main surface of the sub-substrate.

28. (New) The method according to Claim 26, the method further comprising:
forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

portions of the first main surface of the main compound semiconductor layer that the light-extraction-side electrode is not formed on form a main light extraction surface,

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming an opening in the second main surface of the residual substrate portion and filling the opening with a reflective component, and

a portion of the second main surface of the residual substrate portion remains around a periphery of the opening in the second main surface of the sub-substrate portion.

29. (New) The method according to Claim 26, further comprising:
forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

portions of the first main surface of the main compound semiconductor layer that the light-extraction-side electrode is not formed on form a main light extraction surface, and

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming the cut-off portion at least in a region straight under the light-extraction-side electrode, and at least a portion of the region straight under the light-extraction-side electrode is contained in the residual substrate portion.

30. (New) The method according Claim 26, further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming the cut-off portion to have a bottom surface that serves as a main light extraction surface, and

the light-extraction-side electrode is formed so as to cover a portion of the second main surface of the residual substrate portion.

31. (New) The method according to Claim 26, wherein

epitaxially growing a main compound semiconductor layer includes stacking a first-conductivity-type layer, an active layer, and a second-conductivity-type layer in this order, as viewed from a side closest to the residual substrate portion, to form a double heterostructure,

the method further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer;

forming on the first main surface side of the light emitting layer a transparent semiconductor layer composed of a III-V compound semiconductor having a band gap energy larger than photon energy corresponding to the peak wavelength of emission beam from the light emitting layer; and

forming an electrode-forming cut-off portion by cutting off the main compound semiconductor layer in a partial region of the second main surface thereof, over a range from the second main surface side of the main compound semiconductor layer to at least a first main surface of the active layer, the electrode-forming cut-off portion having a second electrode portion, disposed on the bottom surface thereof, different in polarity from the light-extraction-side electrode, and a first main surface of the transparent semiconductor layer serving as the main light extraction surface.

32. (New) The method according to Claim 27, further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

portions of the first main surface of the main compound semiconductor layer that the light-extraction-side electrode is not formed on form a main light extraction surface,

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming an opening in the second main surface of the residual substrate portion and filling the opening with a reflective component, and

a portion of the second main surface of the residual substrate portion remains around a periphery of the opening in the second main surface of the sub-substrate portion.

33. (New) The method according to Claim 27, further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

portions of the first main surface of the main compound semiconductor layer that the light-extraction-side electrode is not formed on form a main light extraction surface, and

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming the cut-off portion at least in a region straight under the light-extraction-side electrode, and at least a portion of the region straight under the light-extraction-side electrode is contained in the residual substrate portion.

34. (New) The method according to Claim 27, further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer, wherein

cutting off a portion of the residual substrate portion to form a cut-off portion includes forming the cut-off portion to have a bottom surface that serves as a main light extraction surface, and

the light-extraction-side electrode is formed so as to cover a portion of the second main surface of the residual substrate portion.

35. (New) The method according to Claim 27, wherein

epitaxially growing a main compound semiconductor layer includes stacking a first-conductivity-type layer, an active layer, and a second-conductivity-type layer in this order, as viewed from a side closest to the residual substrate portion, to form a double heterostructure,

the method further comprising:

forming on a portion of the first main surface of the main compound semiconductor layer a light-extraction-side electrode through which emission drive voltage is applied to the light emitting layer;

forming on the first main surface side of the light emitting layer a transparent semiconductor layer composed of a III-V compound semiconductor having a band gap energy larger than photon energy corresponding to the peak wavelength of emission beam from the light emitting layer; and

forming an electrode-forming cut-off portion by cutting off the main compound semiconductor layer in a partial region of the second main surface thereof, over a range from the second main surface side of the main compound semiconductor layer to at least a first main surface of the active layer, the electrode-forming cut-off portion having a second electrode portion, disposed on the bottom surface thereof, different in polarity from the light-extraction-side electrode, and a first main surface of the transparent semiconductor layer serving as the main light extraction surface.